PEACE RIVER SITE C HYDROELECTRIC PROJECT:

TOURISM IMPACT STUDY

prepared for

B.C. Hydro and Power Authority
Vancouver, British Columbia

by

Canadian Resourcecon Limited
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1 INTRODUCTION

1.0 TOURISM DEVELOPMENT

Tourism development in North East British Columbia has focussed primarily on the variety and availability of fish, wildlife, and wilderness resources intrinsic to the area. Fishermen are faced with a choice of numerous game fish species, including rainbow trout, arctic grayling, mountain whitefish, Dolly Varden, and northern pike, found in the myriad of lakes, creeks, and rivers in the region. The Rocky Mountains and adjacent foothills provide an excellent habitat for big game species like mountain sheep, mountain goat, caribou, and grizzly bear. All the top ranking stone sheep trophies and the largest mountain caribou have been taken in this north-east corner of the province. To serve resident and non-resident hunters alike, a well developed guiding industry has developed and is now expanding operations to provide services for fishermen, trail riders, and other recreationists. Picnicking, camping, and hiking opportunities are also widely available, especially in the five provincial parks in the study region. Sightseeing possibilities range from the region's wildlife resources to the immense W.A.C. Bennett Dam and adjoining power house.

Urban-oriented recreation facilities and events are located throughout the region and include tennis courts, golf courses, swimming pools, and museums. Logging exhibitions, rodeos, canoe races, and fairs take place at various locations during the summer. During winter months, recreational opportunities are limited to skiing (both downhill and cross-country), curling, skating, snowshoeing, and snowmobiling, but these are becoming increasingly important.

In total, the region offers recreational opportunities and experiences for everyone and succeeds in attracting thousands of tourists each year.

2.0 BACKGROUND INFORMATION

This study has been commissioned by the British Columbia Hydro and Power Authority as one component of the impact studies of the proposed Site C hydroelectric project on the Peace River.* Two reports which overlap with this study have already been completed. The Recreation Impact Assessment** examined the impacts the transformation of the Peace River into a large reservoir would have upon recreation patterns in areas to be directly affected by the project. The Resource Evaluation Study*** placed dollar values on the loss of recreation opportunities as predicted above. Together, these reports provide a clear picture of how the Site C project will affect the outdoor recreation patterns of B.C. residents in the Peace River region.

While these reports have adequately handled resident recreation impacts from a provincial viewpoint, they do not examine such impacts from a regional perspective. Using a regional perspective, any loss of recreation opportunities for visitors from outside the region, including people from other regions of the province, represents a loss of tourism and tourist spending. Due to the close relationship between regional tourism and the outdoor recreation resource base there is great concern in the region whenever some competing resource use threatens to alter or destroy any of the region's natural attributes. A case in point is the proposed Site C hydro-

* *The overall environmental study is coordinated by Thurber Consultants Ltd. who have prepared a summary document entitled Peace River Site C Hydroelectric Development Environmental and Socio-Economic Assessment Summary.*

** *Edwin, Reid and Associates Ltd., 1979, Peace River Site C Hydroelectric Development: Recreation Impact Assessment.*

*** *Canadian Resourcecon Limited, 1979, Peace River Site C Hydroelectric Development: Resource Evaluation Study.*

electric dam on the Peace River near Fort St. John. There are some fears that the flooding of the river valley will have a large negative impact on resident and non-resident (tourism) recreation alike, causing important losses to the regional tourist industry. This report examines the likely impacts of the Site C project on tourism in North East British Columbia and determines whether or not such impacts would provide a significant impediment to the regional tourist industry.

3.0 STUDY OBJECTIVES

The objectives of this study are to document tourist activity in North East British Columbia, to identify the regional benefits of this tourism industry, and to identify the impacts the Site C project would have upon regional tourism.

Terms of reference for this study, reproduced as Appendix A, require an inventory of present and future development of the tourism industry both in the region and in the Lower Peace River valley area, and an assessment of the effects that the Site C dam and reservoir would have upon tourism.

Throughout this analysis, changes in recreation capability resulting from the Site C project and the methods used to calculate tourism benefits or costs are consistent with the information presented in the two completed reports mentioned previously. In addition, the terms "tourism" and "recreation" have been used interchangeably to emphasize the dependency of the region's tourist trade on scenic and wildlife resources and the importance of outdoor recreation activities.

4.0 STUDY REGION

Since tourism in the regional context is the focus of this

report, it is necessary to define the region under consideration. Selection of a suitable study region is made difficult by the existence of three definitions of a "region": Peace River-Liard Regional District; Omineca-Peace Resource Management Region; and Peace River-Liard Tourism Region. These "regions" do not have similar boundaries and include parts of northern B.C. that are not relevant to this study. Consequently, a distinct study region has been defined for the purposes of this analysis (see Figure 1).

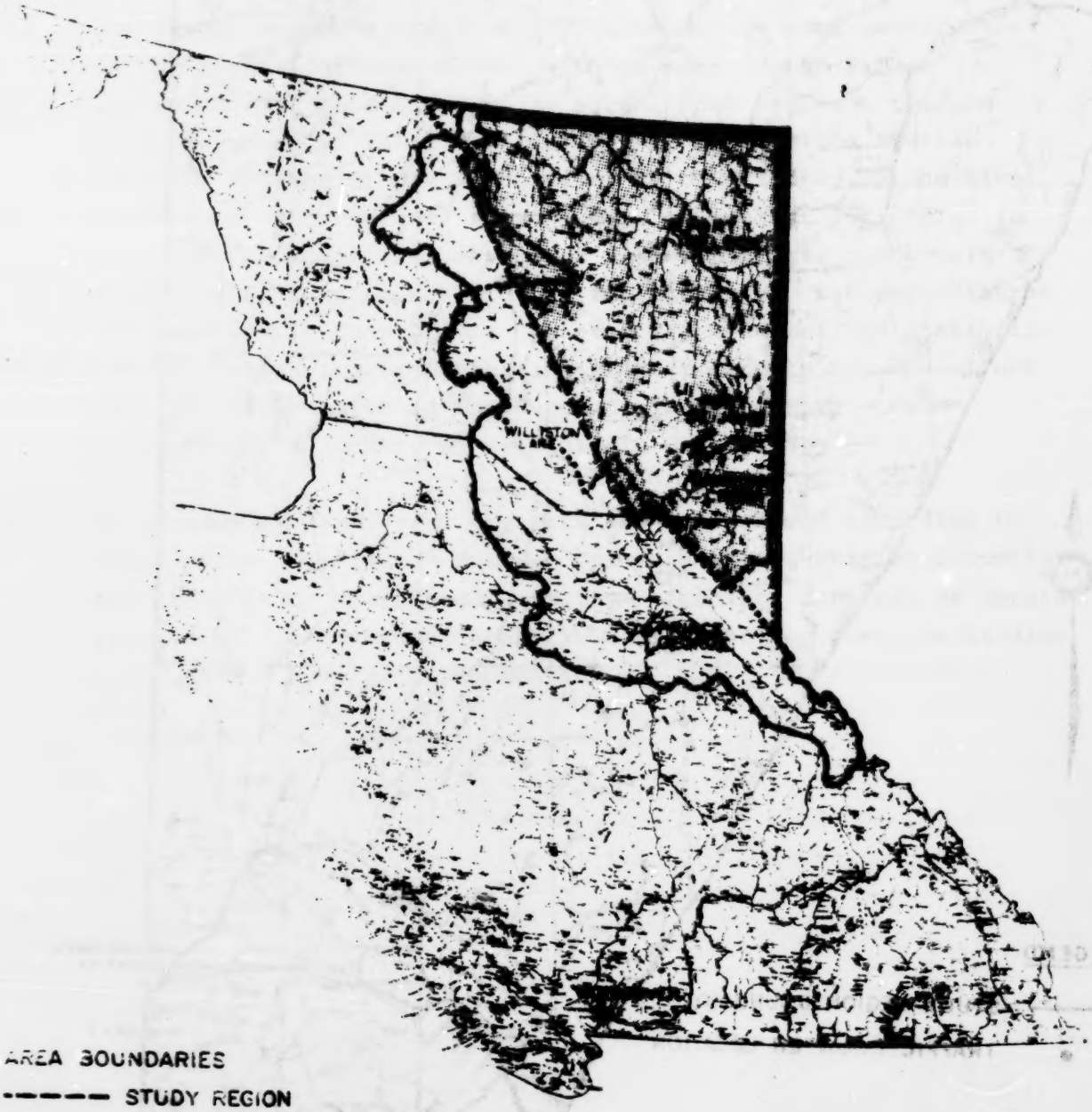
Definition of the study region is based upon the understanding that most tourism occurs in areas directly accessible from the major highway routes. Five major highways are located in proximity to the Peace River and the proposed Site C project. These are:

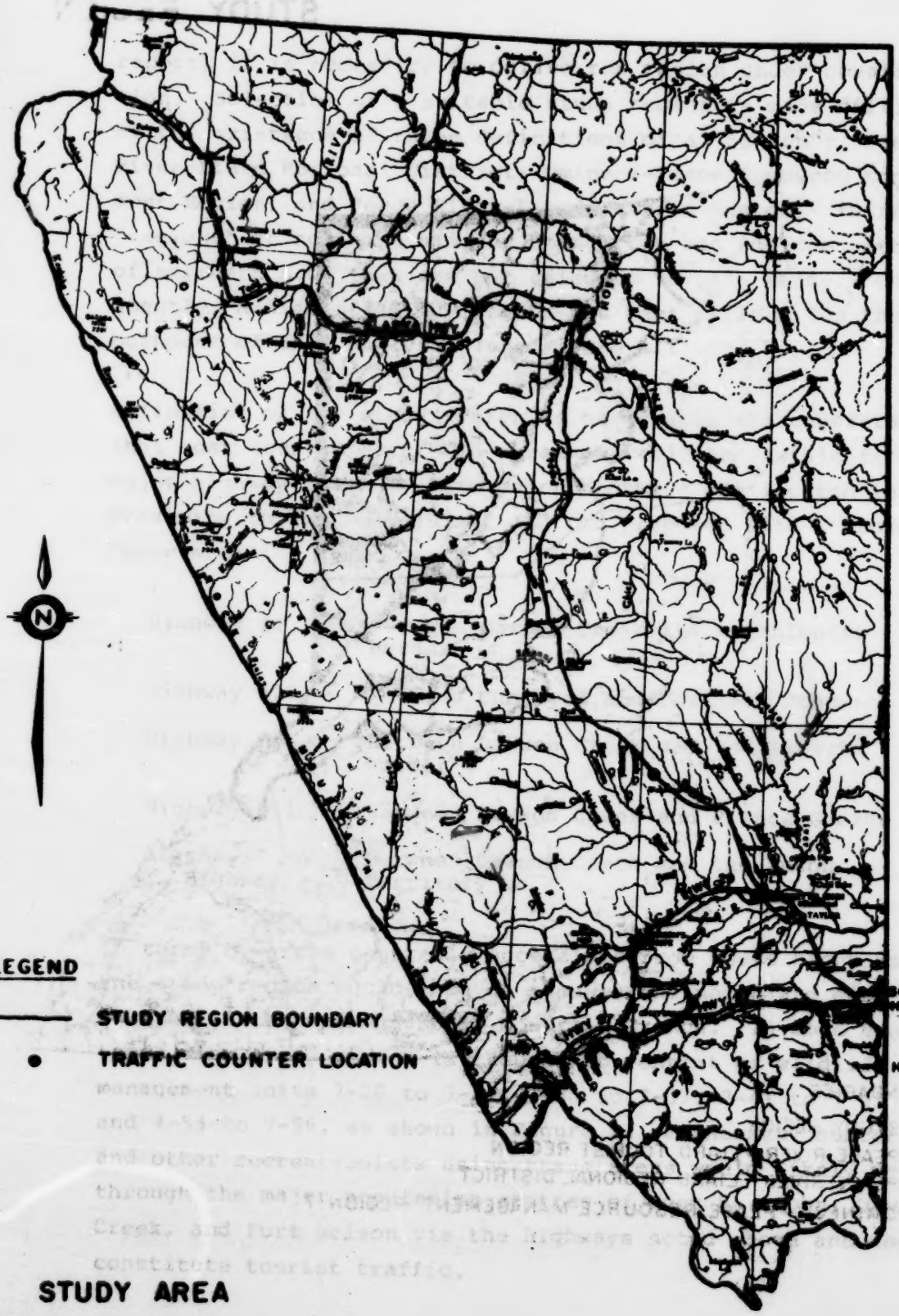
Highway #2	-	Between Dawson Creek and the Alberta border
Highway #29	-	Between Chetwynd and Fort St. John
Highway #49	-	Between Dawson Creek and the Alberta border
Highway #97	-	Between Dawson Creek and Prince George
Alaska Highway	-	Between Dawson Creek and the Yukon Territory

In terms of areas generally accessible from these highways, the study region would include those areas north and east of Lake Williston and the Rocky Mountain Trench. In more exact terms, the study region is thought to consist of wildlife management units 7-20 to 7-22, 7-30 to 7-37, 7-41 to 7-51 and 7-53 to 7-56, as shown in Figure 2. Fishermen, hunters, and other recreationists using these areas would likely move through the major population centres of Fort St. John, Dawson Creek, and Fort Nelson via the highways noted above and would constitute tourist traffic.

FIGURE

STUDY REGION


WILLISTON LAKE
AREA BOUNDARIES
STUDY REGION
PEACE RIVER – LIARD TOURIST REGION
PEACE RIVER – LIARD REGIONAL DISTRICT
OMINECA – PEACE RESOURCE MANAGEMENT REGION 7



STUDY AREA

FIGURE 2

5.0 ORGANIZATION OF THE REPORT

The report has been prepared and organized to contrast tourism in the region (defined above) with tourism in the Site C pondage area. Thus Chapter III establishes regional tourism patterns observed in 1977 while Chapter IV examines tourism in those reaches of the Peace River to be affected by the Site C project. The regional significance of tourist activities in the Site C pondage area both with and without the project is discussed in Chapter V. Project impacts on tourist expenditures are assessed in Chapter VI. Chapter VII examines the possibilities for enhancing or mitigating project impacts and the effect that such schemes would have upon regional tourism. For convenience, a summary is provided in Chapter II.

Throughout the analysis, tourists are categorized according to their place or origin - British Columbia or non-British Columbia - and their major recreation activity - fishing, hunting, or general recreation - in a manner compatible with the two previous studies which have a bearing on recreation.

II SUMMARY

Estimates of regional tourist activity and expenditures in 1977 are shown in Tables 1 and 2. The regional estimates are based on evaluations of traffic counter information and existing studies of tourist spending patterns. Tourist activity in the Site C pondage area was provided in the Recreation Impact Assessment study as prepared by Edwin, Reid and Associates. Tourism in the Site C area represents less than 1 percent of tourism in the region at the present time; consequently, the Peace River and adjacent valley are of minor importance to tourism in the region.

To predict the impact that the Site C project would have, forecasts of tourist activity prepared by Edwin, Reid and Associates for the Site C area were contrasted with forecasts of regional tourism developed in this study. The overall effect of the Site C project would be to reduce dramatically tourism and tourist spending in the pondage area for a four year period after construction of the dam during stablization of the reservoir. During these four years, a total of about 15,000 days of tourism and $275 thousand worth of tourist spending would be lost. However, once the reservoir is created, the new quality and quantities of recreation opportunities available would increase tourism in the area. Over the life of the project these additional benefits would offset any short term losses of tourist activity experienced during the construction period. The predicted impact of the Site C project on tourism in the pondage area and in the Peace region are graphically illustrated in Figure 3.

From the perspective of regional tourism, the importance of the Site C area will actually decrease over time, regardless of whether or not the dam is built. It is doubtful whether the region would actually experience any loss of tourism

TABLE 1: SUMMARY OF TOURIST ACTIVITY IN THE SITE C PONDAGE AREA AND STUDY REGION IN 1977, BY RECREATION ACTIVITY (in user-days)

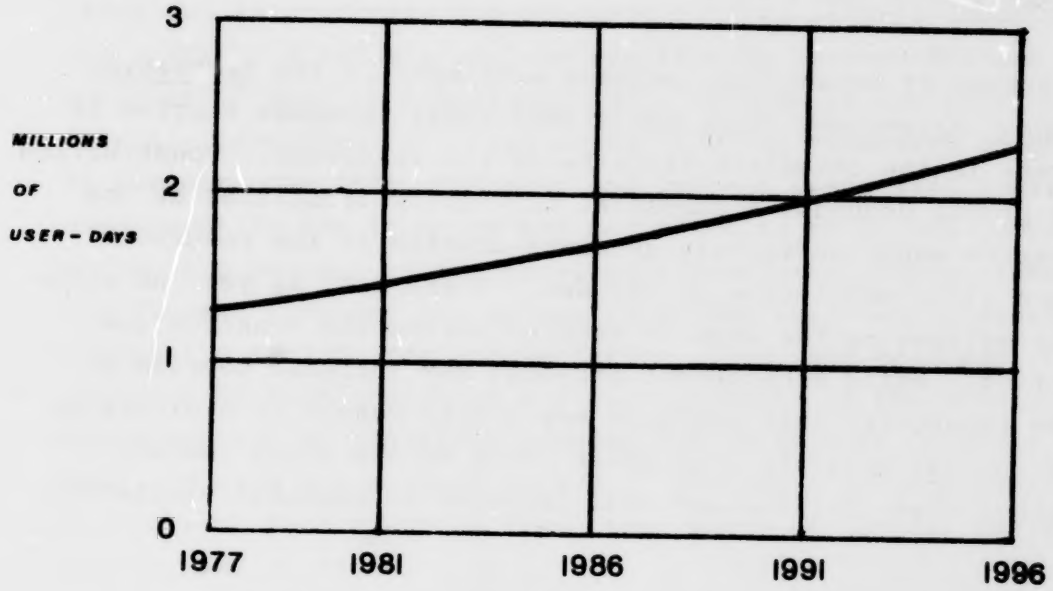
Recreation Activity	Site C Pondage Area	Study Region
Fishing	4,020	49,280
Hunting	950	51,060
General Recreation	7,465	1,204,620
Total Recreation	12,435	1,304,960

TABLE 2: SUMMARY OF TOURIST SPENDING IN THE SITE C PONDAGE AREA AND STUDY REGION IN 1977, BY RECREATION ACTIVITY (1977 dollars)

Recreation Activity	Site C Pondage Area	Study Region
Fishing	$134,885	$ 1,759,735
Hunting	38,950	4,437,480
General Recreation	155,080	24,851,720
Total Recreation	$328,915	$31,048,935

IMPACT OF THE SITE C PROJECT ON TOURISM

1) IN THE PEACE REGION[1]



(1) At time of maximum impact, Site C Project would reduce regional tourism by only 0.3 percent; this impact is negligible on graph.

2) IN THE SITE C PONDAGE AREA

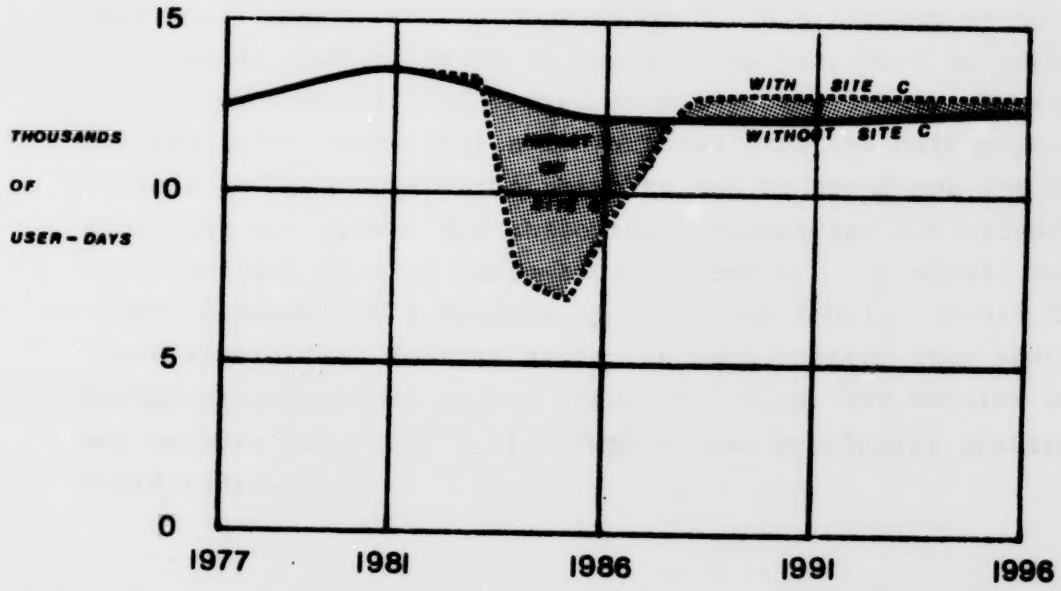


Figure 3

during the construction period, because tourists would simply divert their activities from the Peace River area to other sites within the region.

A number of enhancement schemes developed in the Recreation Impact Assessment study could definitely increase tourism in areas in the immediate vicinity of the reservoir. Construction of picnic grounds, a campsite, or visitor facilities at the damsite would definitely generate tourism in the reservoir area after completion of the dam. There are, as yet, no plans for mitigating the loss of tourism during the construction period. While enhancement projects may increase tourism at the reservoir, this increase may simply result in a diversion of tourist activity from other parts of the study region, rather than generate any real increase in regional visitation.

III Regional Tourism

Tourism in British Columbia has steadily been gaining importance and is currently the province's third largest industry after forestry and mining. As reported by Tourism British Columbia in Tourism Highlights 1977, tourism in the province directly generated $1.3 billion in 1977, an increase of about 14 percent over 1976, and over 150 percent since 1971. Direct employment in the industry was estimated to be 60,000 people, or about 6 percent of the provincial workforce. This elaborate and diverse industry has arisen in direct response to steadily increasing demands for accommodation, food, and transportation services by both residents and non-residents of the province. Approximately 10.7 million persons toured British Columbia in 1977, of whom 6.2 million were B.C. residents and the remaining 4.5 million were visitors from other parts of Canada, the United States, and overseas.

Within the province, however, the Peace River-Liard Tourist Region is the smallest in terms of both the number of tourists and total tourist revenue. As summarized in Table 3, an estimated 105 thousand tourists visited the region in 1977, and spent approximately $20 million. The Lower Mainland and Vancouver Island regions capture by far the largest share of the tourist market, owing to their close proximity to markets and to the numerous and varied amenities available. By way of contrast, the Peace region is farthest from the main population centers and transportation networks and is noted not for its amenities but rather for the outdoor recreation and wilderness opportunities offered throughout the region. It should be noted, however, that average spending per tourist within the Peace River-Liard Tourist Region is much greater than spending within other regions of the province. Thus, the tourism industry may be more important to the region than provincial statistics would indicate.

TABLE 3: SUMMARY OF TOURISM ACTIVITIES IN BRITISH COLUMBIA IN 1977

Tourism Region	Revenue (1977$) (1)	Market Share	Number of Tourists	Total Average Spending Per Tourist (2)
A. Vancouver Island	$240 million	18%	1,925 thousand	$125
B. Southwestern B.C.	440	33%	3,530	125
C. Okanagan	200	15%	1,596	125
D. Kootenays	150	11%	1,170	128
E. Thompson-Shuswap	160	12%	1,275	125
F. Cariboo-Chilcotin	40	3%	322	124
G. Yellowhead 16	95	7%	750	127
H. Peace River-Liard	20	1%	105	190
TOTAL	$1,345 million	100%	10,673 thousand	$126

SOURCE: Tourism B.C. 1977.

(1) It should be noted that revenue estimates are based on a survey of visitors done by Tourism B.C. in 1974, at which time the Peace region's indicated share was 2 percent. This figure has since been revised to 1 percent to take into consideration northern border crossings in the Peace region, which had not been previously considered. Some degree of caution should therefore be exercised in interpreting this information.

(2) Calculated by dividing total revenue by the number of tourists.

For the purposes of this study, tourism estimates for the Peace River-Liard Tourist Region are helpful only to indicate general recreation and tourism trends, and for qualitative statements about tourist traffic. The study region (defined in Chapter I) is much smaller in area than the Peace River-Liard Tourist Region and no estimates of tourism for the study region presently exist. The rest of this chapter examines tourist activity in the study region.

1.0 TOURIST ACTIVITY IN THE STUDY REGION

In examining tourist activity in the study region, a number of factors must be considered. First, and most importantly, it is necessary to determine the number of people who visit the region. Second, the amount of time they spend in the region indicates the intensity of recreation use. A third factor to be examined relates to trip and visitor characteristics. Such information indicates why recreationists come to the area and what activities they enjoy while in the region.

1.1 Number of Tourist Parties

Although estimates of both resident and non-resident visitor volumes in the Peace River-Liard Tourist Region have been published by the Provincial Ministry of Travel Industry, they were not considered as reliable sources for the following reasons:

1) The 1974 Visitors Survey carried out by B.C. Research, which forms the basis for the estimates in Table 3, did not include monitoring of northern border crossings in the Peace region;

2) The 1976 Resident Tourism Survey conducted by B.C. Research - a telephone survey of B.C. residents - resulted in a maximum sample size of 38 residents responding to questions relating to the Peace region;

3) The updating of this information has been done through modelling techniques rather than further surveys or field work;

4) A 1976 survey of resident Albertans carried out by the Albertan government further revealed gross inaccuracies in the B.C. provincial estimates of the numbers of Albertans visiting the Peace region in 1976;

5) In conversation, the regional representative of the Ministry of Travel Industry stated that information regarding the Peace region is not reliable as it is based on a very small statistical sample.

Therefore, any estimate of tourism for the study region based on a fixed proportion of visitor activity in the larger Tourist Region would not be accurate.

To overcome these problems, traffic data were utilized as the basis of estimates of visitor volumes in the study region. Average two-way daily traffic (ADT) volumes in July-August, 1977, for stations on Highways 2, 49, 97, and the Alaska Highway were obtained from the Department of Highways, Traffic Engineering Branch. The locations for which the traffic counts on each route are reported are shown in Figure 2. These locations are felt to be most representative of through traffic as they are outside the influence of local traffic generated by towns or feeder roads. The average daily traffic figures were expanded to yield total traffic volumes for each month by the following method: the recorded monthly traffic volumes for a permanent counter on the Alaska Highway at Mile 261 (between Fort St. John and Fort Nelson) were translated into percentages of the July-ADT at that section for two years - 1976 and 1977. Little variation was noted, and the monthly percentages were averaged. (The highest ADT volumes have been recorded in July for several years). These monthly percentages were then applied to the 1977 July-August ADT volumes for each route, and then multiplied by the number of days in each month

to estimate the total monthly traffic volumes, going in both directions. As traffic passing through the area would be counted twice (once in, once out), monthly traffic totals have been divided in half to determine the number of parties travelling in the region.

While this process accurately portrays total traffic activity in the study region, it is still necessary to differentiate tourist traffic from other types of vehicle movement. This differentiation is made difficult by the fact that some regional residents travelling within the region are included as tourist traffic. It is necessary, therefore, to determine first the amount of pleasure traffic movement along the highways and then to differentiate tourist from resident recreational traffic on the basis of the tourist origin information summarized in the next section.

In order to estimate the proportion of parties engaged in pleasure travel in 1977, several assumptions were made. The tourist season in the Peace region generally extends from May 1 to October 31. Attendance figures at Moberly Lake and Charlie Lake campgrounds, and the monthly traffic counts recorded at Mile 261 on the Alaska Highway are evidence of this seasonal distribution of tourists. In addition, the 1971 Alaska Highway Traffic Study prepared by the Federal Department of Public Works reported that roughly two-thirds of the summer traffic is recreation-oriented. Unfortunately, there is little other information available concerning the recreational component of traffic in the region. Thus the following rough estimates of the proportion of parties engaged in pleasure travel for each route were assumed:

	June-Aug.	Sept.-Oct.	Nov.-March	April-May
Highway 2	2/3	1/3	1/4	1/3
Highway 49	2/3	1/3	1/4	1/3
Highway 97	1/2	1/4	-	1/4
Alaska Highway	2/3	1/4	-	1/4

The total number of parties was then adjusted by these factors to yield the number of pleasure parties travelling each route. Estimated movement of parties engaged in pleasure travel in the study area is shown in Table 4.

1.2 Tourist Origins

Several sources of information disaggregate tourist traffic in the Peace region according to tourist origin.* The makeup of tourist traffic varies considerably among highways, with Albertans representing the highest proportion of tourist parties on highways 2 and 49. British Columbians constitute the largest group of travellers along highway 97 from Prince George. On the Alaska Highway, however, the majority of tourists are Americans. These differences among the highways have been taken into account in calculating recreational activity by each of the different user groups: British Columbians from outside the region, other Canadians, Americans, and visitors from all other areas (overseas).

Table 5 illustrates the origin of tourist parties entering the region in 1977. Albertans and Americans each constituted about one-third of the total number of parties. It is noteworthy that a small number of regional residents were recorded as "tourists" on the basis of traffic counts. As we are concerned primarily with tourists from outside the region, regional residents have been omitted from the remainder of the analysis.

The total number of tourist parties that visited the region in 1977 is then estimated to have been 169,185. This estimate

* *See: - 1971 Alaska Highway Traffic Study, Dept. of Public Works, Canada.*
- Yukon Auto Exit Survey, 1976. Dept. of Tourism, Yukon.
- Peace River-Liard Facts Book, 1977. Ministry of Travel Industry.
- 1976 Alberta Travel Survey, Dept. of Travel, Alberta.
- Provincial Parks Branch - campground attendance data.

TABLE 4: ESTIMATED NUMBER OF PARTIES ENGAGED IN PLEASURE TRAVEL IN THE STUDY REGION IN 1977(1)

Month	Highway 2	Highway 49	Highway 97	Alaska Highway	Total
January	2,385	1,180	-	-	3,565
February	2,325	1,175	-	-	3,500
March	3,040	1,520	-	-	4,560
April	4,020	2,010	1,950	1,590	9,570
May	4,650	2,325	2,230	1,320	10,535
June	12,750	6,390	6,150	6,690	31,980
July	17,300	8,650	8,370	9,050	43,370
August	15,065	7,565	7,315	7,905	37,850
September	5,280	2,640	3,540	2,070	13,530
October	3,505	1,735	1,705	1,395	8,340
November	1,950	960	-	-	2,910
December	1,890	960	-	-	2,850
TOTAL	74,160	37,110	31,260	30,030	172,560

(1) Includes tourist traffic and some pleasure movements of residents within region.

TABLE 5: BREAKDOWN OF TOURIST PARTIES IN STUDY REGION ACCORDING TO ORIGIN OF TOURIST

Origin	Hwy 2		Hwy 49		Hwy 97		Alaska Hwy		TOTAL	
	Tourist-Parties	%	Tourist-Parties	%	Tourist-Parties	%	Tourist-Parties	%	Tourist-Parties	%
British Columbia	12,605	17	6,310	17	11,880	38	1,500	5	32,295	19
Alberta	33,370	45	16,700	45	3,440	11	3,005	10	56,515	33
Other Canadian	8,160	11	4,080	11	1,875	6	1,200	4	15,315	9
American	16,315	22	8,165	22	10,315	33	21,020	70	55,815	32
Overseas	3,710	5	1,855	5	1,875	6	1,805	6	9,245	5
B.C. local tourists (1)	-	-	-	-	1,875	6	1,500	5	3,375	2
TOTAL	74,160	100%	37,110	100%	31,260	100%	30,030	100%	172,560	100%

(1) Excluded from remainder of analysis as resident traffic is not included as tourism.

for the region is 60 percent larger than Tourism British Columbia's estimate of tourism in the larger Peace River-Liard Tourist Region for the same year. This difference is attributable to the different approaches used to calculate tourism and reflects the unreliability of Tourism British Columbia's information base. Tourism estimates prepared for the Alberta government suggest that tourist movements through the area more closely approximate the tourist projections prepared for this report than those of Tourism B.C.

1.3 Number of Tourists

The number of tourists depends both on the number of tourist parties recorded and the number of tourists in each party. The average party size varied considerably among user groups in 1977, ranging from 2.2 persons per party for Overseas tourists to 2.8 for Canadians from outside Alberta and British Columbia. On the basis of these figures it is possible to estimate the total number of visitors to the study region, as indicated below:

Origin	Total Parties	Average Party Size	Total Visitors	%
B.C. tourists	32,295	2.8 (1)	90,425	21.4
Albertans	56,515	2.3 (2)	129,985	30.7
Other Canadian	15,315	2.8 (3)	42,880	10.1
American	55,815	2.5 (3)	139,535	33.0
Overseas	9,245	2.2 (3)	20,340	4.8
TOTAL	169,185	2.5 (3)	423,165	100.0

(1) British Columbia Resident Tourism Survey, 1976, p. 100.

(2) Alberta Travel Survey, 1976, Table 56.

(3) Adapted from Visitors '74.

In terms of the number of tourists the largest proportion of tourists are Americans, who have traditionally comprised the majority of travellers along the Alaska Highway and in the Yukon. For the most part, American tourists are simply passing through the Peace region en route to the Yukon and Alaska. The Peace region is a favourite vacation area for Albertans living in northwest Alberta. They constitute roughly one-third of the regional tourist market. To a lesser degree, non-regional British Columbians, other Canadians, and overseas visitors are attracted to the region. Again, it is believed that many of these travellers are destined for the Yukon and Alaska, although some remain in the region for longer periods of time to take advantage of the outstanding hunting and wilderness opportunities available throughout the Peace region.

1.4 Visitor Days

Another measure of tourist activity is the total number of days that tourists spend in the study region. The term "user-day" is a convenient expression to describe the total volume of use and is defined as a day in which one person engages in some type of tourist activity. All forms of pleasure-oriented travel and associated activities are included in estimates of user-days for the study area.

For those visitors to the Peace River area, most spend a relatively short time in the study region. In a 1974 report entitled Visitors '74, B.C. Research indicated that, although visitors to the region spent 11.5 nights in the province, only 2.6 nights were actually spent in the region. For many of these visitors, it is surmised that the Peace River area is not their main destination but rather serves as a travel corridor for points in the Yukon and Alberta.

As with average party size, the number of days spent in the region varied according to the origin of the visitor. Albertans spent an average of 4.0 days per trip while other Canadians stayed in the region for only 1.6 days. Total user-days in the study region in 1977 amounted to about 1,304,960 days, as indicated below:

Origin	Total Visitors	Average Length Stay	Total User-days	%
Resident:				
B.C. non-regional	90,425	2.4 days (1)	217,020	16.6
Non-Resident:				
Alberta	129,985	4.0 days (2)	519,940	39.8
Other Canada	42,880	1.6 days (2)	68,610	5.3
American	139,535	3.2 days (2)	446,510	34.2
Overseas	20,340	2.6 days (3)	52,880	4.1
TOTAL	423,165	3.1 days	1,304,960	100.0

(1) British Columbia Resident Tourism Survey, 1976, p. 101. Median observation taken due to small sample size.

(2) Taken from Peace River-Liard Tourism Facts Book 1977 and weighted according to origins of tourists in the study region.

(3) Average figure for region as noted in Visitors '74, Table 64.

1.5 Tourist Activities

On the basis of information contained in the Peace River-Liard Tourism Facts Book for 1977, visitors to the region reported participation in eleven different activities. By far the most important activity in the Peace River-Liard Tourism region was sightseeing, noted by 30 percent of visitors. Camping and picnicking were activities reported by 18 percent and 14 percent of tourists. Other outdoor recreation activities included boating (6 percent), swimming (7 percent), and fishing and hunting (10 percent). Indoor activities such as shopping and visiting friends were among the other forms of tourist activity reported.

To measure the significance of some of these activities in the study region, estimates of user-days for hunting, fishing, and other forms of recreation have been made. This allows a more detailed comparison of the relative importance of the Site C impact area to the Peace region as a whole. For a detailed explanation of the methods used to compute angler-day and hunter-day estimates, the reader is referred to Appendix B. Table 6 shows the estimated user-days in 1977 for fishing, hunting and general recreation by visitor origin. General recreation was computed as the residual value after subtracting user-days for hunting and fishing from the estimated total user-days in the region.

In relative terms, "general recreation" activity by tourists accounted for roughly 92.3 percent of the total user-days; fishing and hunting accounted for 3.8 and 3.9 percent respectively.

TABLE 6: SUMMARY OF RECREATION ACTIVITIES (IN USER-DAYS) BY TOURISTS IN THE STUDY AREA IN 1977

	user-days			
Origin of Tourist	Fishing	Hunting	General Recreation	Total Recreation
British Columbia	29,700	41,080	146,240	217,020
Other provinces	12,445	500	575,605	588,550
Non-Canadian	7,135	9,480	482,775	499,390
Total	49,280	51,060	1,204,620	1,304,960

1.6 Visitor Characteristics

Although no information sources directly examine the characteristics of visitors to the study region, it is likely that visitors to the region are similar to the tourists found

in the Peace River-Liard Tourist Region. According to a 1974 study of visitors to the region*, most tourists travelled by car or station wagon (61 percent) while 38 percent used a truck camper or motor home for transportation. The type of accommodation used by visitors varied according to their origin. British Columbians touring the region depended on relatives and friends for about 68 percent of their accommodation needs. Albertans relied on friends and relatives for 50 percent of their lodging. In contrast, other visitors relied heavily on campgrounds and to a lesser extent on motels during their trip through the area. The heavy use of campgrounds by non-residents likely relates to their extensive use of recreational vehicles and to the longer distances travelled to get to the region.

In many respects, characteristics of parties travelling in the Peace Region differ markedly from parties travelling in other parts of the province. Only 23 percent of parties were made up of adults with children, compared to 35 percent for the province as a whole. Adult couples made up over half of all the parties travelling in the region. In terms of the age of adult tourists, the proportion of travellers over 56 years old was twice as large for the region as for the province as a whole. There were comparatively fewer adults in the 36 to 55 age category. These variations in age and party compositions led B.C. Research to comment:

> When we consider that the average length of stay away from home was 26 days (compared to an average of 12.8 for the sample as a whole) it would appear that the north country has greatest appeal to those visitors who have plenty of time for exploration, i.e. retired people, students and other groups who have plenty of leisure.
>
> (B.C. Research, 1974. p. 132)

* *B.C. Research (1975) Visitors '74 prepared for The Department of Travel Industry.*

Other variations in visitors to the Peace Region are also noticeable. In terms of personal incomes of tourists, the highest income bracket was poorly represented by tourists in the region; only 19 percent of tourists in the region reported incomes over $20,000 in 1974, compared to 28 percent for the province.

2.0 THE VALUE OF TOURISM TO THE REGION

The value of tourism to a region is measured in two different ways, depending on the origin of the tourist. As we are examining the effects of tourism on the regional economy, the most important measure of tourist value is the amount of money that tourists spend on goods and services in the region. These expenditures create jobs and income within the region, and these measures represent the real value of the industry. For all visitors to the region, be they British Columbians from other regions of the province or non-British Columbians, the gross value of tourism to the study region can be calculated by estimating their total expenditures in the region.

The second measure of tourist or recreation value applies only to British Columbian visitors to the region. As residents of the province and as owners of provincial recreation resources, British Columbians benefit directly whenever they make use of the resource. To evaluate the recreation benefits experienced by resident tourists themselves, it is necessary to remember that units of recreation are not marketed, so there is no market price with which to measure them. The value of the benefits enjoyed by recreationists is instead measured by determining how much residents would be willing to pay for recreation if they were to be charged for the use of the resource.

With these two measures of tourist value it is possible to determine the value of tourism and recreation in the study region. British Columbian and non-British Columbian tourists must be examined separately, however, owing to the different types of value associated with each group. In addition, tourism values are calculated for the three major classifications of recreation activities - fishing, hunting, general recreation - in order to be consistent with the previous reports on recreation and the Site C hydroelectric project.

2.1 Resident Tourism Values

Although no direct examination of resident tourism values in the study area has ever been undertaken, information on resident expenditures and user benefits for hunting and fishing in the province does exist. One particular study, The Value of Fresh Water Sport Fishing in British Columbia,* estimated the value of resident fishing per angler day; these estimates, updated to 1977 dollar equivalents, will be used as the basis of this study. A similar report for resident hunting, entitled The Value of Resident Hunting in British Columbia,** will represent the basis for determining the value of recreation benefits associated with hunting. These sources were also used for the computation of recreation values in the recreation section of the Resource Evaluation Study of the environmental assessment of the Peace River Site C hydroelectric project.

Expenditure information for both resident fishermen and hunters is also available from the reports noted above. In examining this information, it is important to remember that expenditures by B.C. residents inside the province serve only to redistribute money within the province; no gain in provincial income results. From a regional perspective, however, purchases by British Columbians from outside the region create both employment and income benefits within the local economy.

2.1.1 Resident Fishing

The value of a day of fishing, as determined by what resident anglers were willing to pay for that experience, was estimated to have ranged between $5 and $10 in 1970. In 1977, the equivalent value of an angler day would have been between $8.50 and

* *Pearse Bowden Economic Consultants, 1971.*

** *Pearse Bowden Economic Consultants, 1972.*

$17.10 per day. This range would suggest an average value of $13.00 per day to be the measure of daily recreational benefits for resident anglers in the province.

On the basis of angler day estimates estimated in Appendix B, residents of B.C. from outside the study region who fished in the region in 1977 experienced recreational benefits equivalent to about $386,100 for their 29,700 days of sports fishing.

Expenditures by resident fishermen were estimated at $349.65 per angler for the 1976/77 season, or about $26.30 per angler day. Average spending by resident anglers would have been about $28.40 per angler day in 1977, consisting of the following costs:*

Cost	Average Daily Cost	Proportion of Total Cost	Total Costs
Travel	$6.19	21.8%	$183,840
Food and lodging	$6.59	23.2%	$195,725
Tackle, other equipment	$5.03	17.7%	$149,390
Boat, motor purchase	$8.72	30.7%	$258,985
Rentals, launch fees, other	$1.87	6.6%	$ 55,540
TOTAL COSTS	$28.40	100.0%	$843,480

On this basis, spending by resident anglers in the study region would have totalled $843,480 for the 29,700 angler days.

* *This analysis assumes that most resident anglers bought their fishing licences outside the study region.*

2.1.2 Resident Hunting

The value of a day of resident hunting is directly related to the types of game being hunted. For some game species, particularly mountain sheep, grizzly bear, and caribou, resident hunters are prepared to pay considerably more than for other species. This differentiation was first estimated for the 1970-71 hunting season, when the value of hunting opportunities was estimated to range from $5 per day for black bear, wolf, and cougar hunting, to $20.50 per day for hunting mountain sheep. Unfortunately there have been no attempts to update this information, and subsequent studies have adopted these estimates in current dollar equivalents. This same procedure will be repeated here, although the figures shown indicate the equivalent value in 1977 dollars.

For the study region the particular mix of hunting opportunities enjoyed by residents has been documented in Appendix B. On the basis of these use figures and the value figures described above, it is then possible to calculate the value of resident hunting in the study area.

Game Species	Value per Day (1)	Hunter Days (2)	Total Value
Deer	19.20	3,909	$ 75,050
Moose	28.75	35,708	1,026,605
Elk	28.75	1,771	50,915
Caribou	30.65	3,013	92,350
Grizzly Bear	25.90	785	20,330
Mountain Goat	20.25	1,329	26,910
Mountain Sheep	38.85	1,591	61,810
Other big game	9.60	4,067	39,040
TOTAL	$26.70	41,080 (3)	$1,096,836

(1) Estimated by increasing the values estimated in 1970-71 at a rate equal to the general rate of inflation up to 1977.
(2) As reported in the provincial hunter sample.
(3) Adjusted to exclude double counting (see Appendix B).

Resident hunter expenditures were also first detailed for the 1970-71 season and totalled $290 per hunter at that time, or about $12.50 per hunter day. For the 1977 hunting season no such information is available although estimates can be made, assuming expenditure patterns similar to those noted in 1970-71 and by inflating to 1977 equivalents. It must be remembered, however, that, since the cost of resident hunting licences was increased in 1974, a separate estimate must be made for this cost. On these assumptions, hunters would have had expenses of $41.00 per day, broken down as follows:

	Average Daily Cost	Proportion of Total Cost	Total Cost
Transportation	$20.20	49.3%	$ 829,820
Guns, ammunition and equipment	11.25	27.4	462,150
Food, alcohol and lodging	5.60	13.7	230,050
Miscellaneous	2.85	6.9	117,080
Licence fees	1.10	2.7	45,190
TOTAL	$41.00	100.0%	$1,684,290

At these rates total expenditures by resident hunters in the study area would have amounted to $1,684,290 for the total of 41,080 hunter days of activity.

2.1.3 Resident General Recreation

Few information sources are available for evaluating general recreation activities. Those sources that do exist show a tremendous variation in putting a dollar value on the benefits experienced by recreationists. To be consistent with the Resource Evaluation Study, however, the value of general recreation activities is assumed to be $10.20 per user-day. This estimate is based upon information contained in a report

by Quadra Economic Consultants (1977)*, which bases its estimate on studies of non-consumptive recreation at Pacific Rim National Park and in the Maritime provinces. For the study region, then, the total recreation benefits experienced by resident tourists were equivalent in value to $1,491,648 based on 146,240 user-days of general recreation activities.

Information on expenditures made by resident tourists in the study region is very limited. Although a percentage breakdown of their spending patterns is available, there is no indication of the total amount of expenditures made.** In lieu of regional expenditure information, the provincial average of $19.30 per resident per day in 1976 is thought to be a realistic estimate. The 1977 dollar equivalent of this estimate ($20.85 per day) is approximately half the daily expenditures of resident hunters, and two-thirds the daily expenditures of resident fishermen.

For the estimated general recreation activity in the region by resident tourists, and the known composition of tourist expenditures,*** it is possible to calculate total regional expenditures by resident tourists. Total spending in 1977 was estimated to be $3,049,100, as summarized below:

* *This report is entitled Fish and Wildlife in British Columbia: A Review of Resource Values.*

** *The 1976 B.C. Resident Tourism Survey prepared by B.C. Research records average expenditures of $13.41 per person per night in the Peace Region, based on a sample of 19 responses, compared to a provincial average of $19.30 per person per night. This difference is most likely due to problems with the sampling procedure, rather than an actual variation in spending.*

*** *Tourism B.C. Peace River-Liard Tourism Facts Book 1977, p. 30.*

Type of Expense	Average Daily Expenditure	Proportion of Total Cost	Total Cost
Transportation	$6.05	29.0%	$ 884,750
Accommodation	4.60	22.1	672,700
Entertainment	3.35	16.1	489,900
Hospitality	2.70	12.9	394,850
Shopping	2.30	11.0	336,350
Groceries	1.85	8.9	270,550
TOTAL	$20.85	100.0%	$3,049,100

2.2 Non-Resident Tourism Values

As discussed above, the value of non-resident tourism is measured in terms of the dollars that non-residents add to the economy of the region. Like resident tourists, non-residents spend different amounts per day for tourism, depending on the type of recreation activity in which they participate.

2.2.1 Non-Resident Fishing

In order to fish, non-residents must first purchase a fishing licence. Three types of basic licences are available to non-residents, depending on their place of origin and the length of time they wish to fish. These licences and their costs are summarized below:

Resident of Canada (annual licence)	$5.00
Non-resident of Canada (annual licence)	$15.00
Non-resident of Canada (3-day licence)	$6.00

For the study region in 1977/78, non-residents paid $36,983 to purchase basic fishing licences.* An additional licence is

* *B.C. Fish and Wildlife Branch (1977) Summary of Revenue Derived From Sale of Various Licences, Collections, Etc.*

required if non-residents wish to fish in lakes and rivers with a special designation. However, no such licences were purchased by non-residents in Fish and Wildlife Branch offices within the study region. Non-resident fishermen faced other costs in the course of their fishing trip: transportation costs accounted for about one-quarter of these other costs; expenditures on food and lodging represented another 50 percent of average daily costs, while payments for fishing tackle, equipment, and other miscellaneous expenses constituted the remaining trip costs.

According to information contained in a recent report by Quadra Economic Consultants, and updated to 1977 dollars, fishermen from other parts of Canada spent more per angler-day ($47.49) than did non-Canadians ($40.40)*.

Non-resident fishermen in the study spent a total of $879,270, (excluding licences) as summarized in Table 7. The proportion of expenditures made within the regional economy is not known but, considering regional traffic patterns, it is expected that most spending occurred locally. Total expenditures, including licence fees, made by non-resident fishermen in the study region amounted to a total of $916,253 in 1977.

2.2.2 Non-Resident Hunting

Non-resident hunters must make three types of expenditures in order to hunt: the first cost is that of licence fees. Hunting licences are independent of the length of the hunt, and in 1977/78 non-residents paid either $7 (for Canadians) or $75 (for non-Canadians) for their basic licences. Additional licences must then be purchased for each big game species the hunter wishes

* *These estimates of expenditures per angler day are based upon information for 1976 presented in Table 8 and Table 7 of Fish and Wildlife in British Columbia: A Review of Resource Values (1977) and updated to 1977 dollar equivalents by using the Consumer Price Index.*

TABLE 7: NON-RESIDENT ANGLER'S EXPENDITURES ON FRESH WATER SPORT FISHING, 1977-78, IN THE STUDY REGION(1)

Type of Expenditure	Resident of Canada	Non-Resident of Canada	Total Non-Resident Fishermen
Travel Costs	$155,065 ($12.46)	$ 76,485 ($10.72)	$231,550 ($11.83)
Food and Lodging	291,835 ($23.45)	156,330 ($21.91)	448,165 ($22.89)
Tackle, Equipment	64,715 ($5.20)	26,115 ($3.66)	90,830 ($4.64)
Rental, Launch, etc.	79,400 ($6.38)	29,325 ($4.11)	108,725 ($5.55)
TOTAL	$591,015 ($47.49)	$288,255 ($40.40)	$879,270 ($44.91)

(1) Figures in brackets represent average spending per item per angler day.

to hunt. In 1977 these additional species tags cost hunters in the Omineca Peace an average of $287. Total licence costs, then, were $294 for Canadian and $362 for non-Canadians. Total licence costs for non-residents hunting inside the region were:

Origin	Number of Hunters	Average Cost	Total Cost
Canada	49	294	$ 14,406
United States	850	362	307,700
Other	89	362	32,218
TOTAL	988	$359	$354,324

The second type of cost faced by non-resident hunters is that of fees paid to Guide Outfitters. It is mandatory that non-residents be accompanied by a licenced guide in order to hunt. Guide fees represented the greatest cost incurred by non-resident hunters and averaged $1,861 per hunter in 1977/78.* Total guide fees paid by the 988 non-resident hunters in the study region amounted to $1,838,668.

Non-resident hunters also faced transportation, accommodation and other types of costs during their hunt. Some hunters purchased additional equipment in the region, and some left their trophies with taxidermists. For 1977 transportation costs incurred in the province by non-resident hunters amounted to $192,660 or about $195 per hunter. The exact proportion of these costs spent in the local region is not known but is probably very high, considering that many hunters enter the province from Alberta. Other costs amounted to $372 per hunter. For the study region, non-resident hunter expenditures on accommodation, food, equipment, and so forth would have amounted to $367,536.

* *All information regarding expenditures by non-resident hunters comes from Canadian Resourcecon Ltd. 1979, Economic and Resource Management Aspects of the Commercial Use of Fish and Wildlife Resources in British Columbia.*

Total expenditures by the non-residents who hunted in the study area are estimated to have been over $2.75 million in 1977/78. As summarized below, most of this tourism income came from Americans with smaller amounts coming from Canadian and other hunters.

Origin	Total Expenditures				
	Hunting Licences	Guide Fees	Transport Costs	Other Costs	Total Costs
Canada	$ 14,405	$ 91,190	$ 9,555	$ 18,230	$ 133,380
United States	307,700	1,581,850	165,750	316,200	2,371,500
Other	32,220	165,630	17,355	33,105	248,310
TOTAL	$354,325	$1,838,670	$192,660	$367,535	$2,753,190

2.2.3 Non-Resident General Recreation

Non-residents engaged in general recreation activities had lower expenditures than those non-residents involved in fishing or hunting. This is mainly attributable to the fact that general recreation activities require no licence fees or guide fees. Instead most visitor expenses were on items essential to the nature of their trip - accommodation, transportation, and groceries. Although no specific expenditure information is available for the region, average tourist spending for the province was estimated to have been about $16.00 per day in 1974.* After inflating this figure to estimate tourism spending in 1977, average daily expenditures by non-resident tourists would have

* *This figure was calculated using information from Table 32 in Visitors '74 and a corresponding figure of $16.20 per day was given on page 67 of Tourism Fact Book 1975.*

been about $20.60. Of this, $7.40 would have been spent on transportation, $4.35 on accommodation, $2.90 on groceries and the remaining $5.95 would have been used for general shopping and other miscellaneous expenses.

Given that general recreation activities by non-resident tourists was assumed to total 1,058,380 days in 1977, total expenditures would then have amounted to $21,802,620.

	Average Daily Cost	Proportion of Cost	Total Costs
Transportation	$ 7.40	35.9%	$ 7,832,010
Accommodation	4.35	21.1%	4,603,950
Groceries	2.90	14.1%	3,069,300
Miscellaneous	5.95	28.9%	6,297,360
TOTAL	$20.60	100.0%	$21,802,620

2.3 Summary of Regional Tourism Values

For British Columbian residents touring the study region in 1977, the value of the recreation benefits they enjoyed was approximately $2.97 million. This estimate is based on the different values that residents place on different recreation activities, ranging from $10.20 per day of general recreation to $26.70 for a day of hunting. By activity, the value of recreation in the study region is summarized below:

Activity	Value per Day	Total User-Days	Total value
Fishing	$13.00	29,700	$ 386,100
Hunting	26.70	41,080	1,096,836
General Recreation	10.20	146,240	1,491,648
TOTAL	$13.71	$217,020	$2,974,584

Regional benefits from resident and non-resident tourist expenditures amounted to $31,048,935 in 1977. Of the total, expenditures by hunters accounted for 14.3 percent, 5.6 percent came from fishermen, and the remaining 80.1 percent was attributable to tourists participating in general recreation activities. Total tourist spending in 1977 can be broken down by type of expense and residence of user as shown in Table 8.

TABLE 8: TOTAL TOURIST SPENDING IN THE STUDY REGION IN 1977

Item of Expenditure	Resident Tourists	Non-Resident Tourists	Total Tourists
Transportation	$1,898,410	$ 8,256,220	$10,154,630
Food and Accommodation	1,369,025	8,121,415	9,490,440
Miscellaneous Expenses	1,393,720	8,244,755	9,638,475
Licences	45,190	391,310	436,500
Equipment	870,525	458,365	1,328,890
TOTAL	$5,576,870	$25,472,065	$31,048,935

IV Tourism in the Site C Pondage Area

In the area to be flooded by the proposed Site C hydroelectric project, the Peace River itself is the most important natural recreational feature. Although road access to the river is very limited, considerable boating takes place on the river. As the only means of transportation to recreation sites along the river, boating plays an important role in most tourist activities, including camping, picnicking, fishing, and hunting. Access to the river is limited to only four boat launching sites along a 50 mile stretch of river, but only two of these sites are considered to be major access points. General recreation activities that do not rely on water transportation include sightseeing, nature study, hiking, snowshoeing, and cross-country skiing. Sport fishing on the river is currently very good owing to the blockage in fish movements caused by the Site One dam. Most fishing occurs between Site One and Hudson's Hope and is directed at rainbow trout and mountain whitefish. Additional angling occurs at other spots further downstream, but the intensity of angling is much lower at these sites.

The Peace Valley provides some good hunting opportunities for deer, moose, and black bear. Upland birds, particularly ruffed grouse, are quite common and thought to be underharvested in comparison to other types of game.

1.0 TOURIST ACTIVITIES IN THE PONDAGE AREA

Edwin, Reid and Associates have estimated that recreational activities in the Site C pondage area amounted to 36,275 user-days in 1976, rising to 38,435 user-days in 1977. Of this total most users were residents of the study region and are not considered to be tourists. Tourist activities only totalled 12,435 user-days in 1977, as shown by the following table:

Origin of User	Fishing	Hunting	General Recreation	Total Recreation
Regional Resident	8,530	1,430	16,040	26,000
Other B.C.	2,765	950	5,205	8,920
Non-British Columbians	1,255	-	2,260	3,515
TOTAL	12,550	2,380	23,505	38,435

Thus, tourists accounted for 32.4 percent of total recreation use in the Site C pondage area. General recreation activities accounted for 60 percent of tourist activities.

In terms of regional tourism, the Site C pondage area plays a minor role, accommodating less than 1 percent of the estimated 1.30 million tourist days in the study region. In terms of recreation activities, about 8.2 percent of all fishing by tourists in the study region was in the Site C pondage area. Only 1.9 percent of hunting by tourists in the region occurred in the Site C pondage area; the Peace Valley accommodated only 0.6 percent of general recreation activities by tourists in the study region. Unlike the study region where British Columbia tourists accounted for only 16 percent of tourist activity, this group represented the majority of tourism (71.7% of user-days) in the Site C pondage area.

2.0 VALUE OF TOURISM IN THE PONDAGE AREA

The method for calculating tourism values in the pondage area coincides with the method used in calculating regional tourism values. As noted before, measurements of value are determined by tourist expenditures for both resident and non-resident tourists. For resident tourists, however, a second measure of value, that of user benefit, must also be considered. These factors, plus differences in resource quality and recreation activities, are evaluated below.

2.1 Resident Tourism

Visitors from other parts of British Columbia likely perceived the quality of fishing in the Peace River, based on average catch per day, (1.63 fish per day) to be below average provincial fishing quality (2.35 fish per day). For this reason the value of the Peace River for angling purposes was estimated to be approximately $11 per angler day in 1977, $2 per day less than the regional and provincial average. On this basis the total worth of angling by resident tourists in the Site C pondage area amounted to $30,415 in 1977.

Assuming that expenditures by resident anglers in the pondage area were similar to those of anglers in the study region, total spending by resident anglers was $78,525. This amounts to about 3.6 percent of resident angler expenditures in the region.

According to the mix of hunting opportunities available in the pondage area (53 percent big game and 47 percent upland bird and waterfowl), the value of a day of resident hunting was estimated to be $20.60. In comparison to the larger study region, average daily hunter benefits were about 20 percent lower in the pondage area. Total hunter benefits for 950 days of hunting by resident tourists in the Site C area were therefore

equivalent in value to $19,570. This represents only 1.8 percent of hunter benefits for the region.

Hunter expenditures at this intensity of hunting would have totalled $38,950, based on the assumption that resident tourists hunting in the Site C area and in the study region faced similar costs.

For the 5,205 days of general recreation enjoyed by resident tourists in the Site C pondage area, the total user benefits would have amounted to $53,100. This total is based on $10.20 per user day, which is thought to reflect the average value of recreation throughout the province.

Tourist expenditures by residents engaged in general recreation activities were calculated assuming expenses of $20.85 per day. In total these expenditures amounted to $108,525. This amount accounts for 3.6 percent of resident tourist spending in the study region.

2.2 Non-Resident Tourism

Expenditures by non-British Columbian tourists were assumed to be the same for the study region and the Site C pondage area. To calculate total expenditures by non-residents, daily expenditure information was combined with user-day estimates as follows:

Activity	User-Days	Expenditure per Day	Total Expenditures
Fishing	1,255	$ 44.91	$ 56,360
Hunting	0(1)	275.87	-
General Recreation	2,260	20.60	46,555
TOTAL	3,515	$ 29.28	$102,915

(1) No guided hunter activity (non-resident hunter) was reported in the Site C area.

Total spending by non-resident tourists in the Site C pondage area amounted to only 0.4 percent of total non-resident tourist spending in the study region.

2.3 Summary of Tourism Benefits

Total tourist spending (both resident and non-resident) amounted to $328,915 in 1977. These expenditure patterns can be broken down by activity and tourist origin as shown in Table 9. It is noteworthy that tourists from outside B.C. spent more per day than did resident tourists, while hunters and fishermen had daily expenditures that were almost 70 percent greater than for tourists engaged in general recreation activities.

For resident tourists the user benefits they enjoyed were estimated to be equivalent in value to $103,085 in 1977.

TABLE 9: SUMMARY OF TOURIST EXPENDITURES IN THE SITE C PONDAGE AREA, 1977

Origin	Fishing	Hunting	General Recreation	Total Recreation
British Columbia (1)	$ 78,525	$38,950	$108,525	$226,000 (68.7%)
Outside British Columbia	56,360	-	46,555	102,915 (31.3%)
TOTAL	$134,885 (41.0%)	$38,950 (11.8%)	$155,080 (47.2%)	$328,915

(1) Excludes residents of the study region.

V REGIONAL SIGNIFICANCE OF TOURIST ACTIVITIES IN THE SITE C PONDAGE AREA

1.0 PRESENT SIGNIFICANCE

At present the level of tourist activities in the Site C pondage area is insignificant in the context of regional tourism. The 12,435 days of tourism reported in the Site C pondage area in 1977 represent less than 1 percent of total tourism in the region (1.3 million days). Only the sport fishing resource of the Peace River is judged to be of significance to the region (representing 8.2 percent of tourist fishing in the region), but it must be remembered that the good fishing opportunities presently available were created by construction of the Site One dam and are expected to diminish upon completion of that dam. Although the pondage area presently receives a significantly higher concentration of use by British Columbians (72 percent) than does the region (16 percent of use by British Columbians), the pondage area is still of only minimal importance as a recreation site used by provincial residents; only 4.1 percent of reported resident tourism in the region occurred in the pondage area. It may be concluded, therefore, that at present the Peace River and adjacent valley in the vicinity of the proposed Site C dam and reservoir are a small fraction of the regional tourist resource.

2.0 FUTURE SIGNIFICANCE

Edwin, Reid and Associates predict that tourist activities in the Site C pondage area will increase slowly over the next twenty years. They considered two factors in making these predictions. First, the amount of tourist traffic along the highway from Fort St. John to Chetwynd has been increasing slowly in recent years (1.1 percent per year from 1968 to 1976) and is not expected to change in the future. Secondly, the main tourist attraction

along the highway, the Peace River, lacks road access and usable shoreline. Without any improvements in the availability of this tourist resource, there would be no reason for a greater proportion of tourist traffic to spend time on or along the river.

Some suggestions have been made regarding development of the Peace River to increase tourism, including a proposal by Edwin, Reid and Associates (summarized in Table 11 of their report). Although implementation of such suggestions could increase the intensity of tourist activity in the Site C pondage area, uncertainty about whether these suggested improvements would ever be made has led us to exclude these proposals from forecasts of tourism in the Site C area.

Tourist activity in the study region is also expected to grow relatively slowly, although no specific growth rate has as yet been suggested. Based on 1964 and 1971 traffic surveys, average yearly growth in traffic volumes on the Alaska Highway was estimated in the order of 2 percent.* The permanent counts taken since 1973 do not indicate consistent trends and, in any case would not give a realistic impression of long term trends, as only four years of data are available. Other sources** have estimated traffic growth to be roughly 7 percent per annum, and their projections have been made on this basis. More recently, though, it has been observed that traffic volumes have shown a declining trend.*** Given this information and the understanding that gasoline prices will rise steadily (in real terms) over

* *Department of Public Works, Canada. Alaska Highway Traffic Study, 1971.*

** *Department of Public Works, Canada, and U.S. Department of Transportation, Federal Highway Administration, Environmental Impact Statement, Shakwak Highway Improvement, Vol. I, 1977; and Canadian Resourcecon Limited, Kitwanga-Meziadin Highway: Economic Impacts, 1975.*

*** *The Yukon Department of Tourism and Information has noted a 10% decrease in 1977 highway traffic over the previous year; dropping again for a second consecutive year. See: Yukon Tourism 1977 Industry Highlights.*

the forecast period, more conservative estimates of tourist traffic are appropriate. For this study tourist traffic is estimated to increase at rates of between 2 percent and 4 percent per year over the twenty year forecast period. It is hoped that the actual rate of growth in regional tourism will fall within this range. On this basis, projected tourism in the study region (in user-days) to the year 1996 is summarized below:

	Annual Rate of Increase in Regional Tourism Activity	
	2%	4%
1977 actual	1,304,960	1,304,960
1981	1,412,530	1,526,620
1986	1,559,550	1,857,370
1991	1,721,870	2,259,770
1996	1,901,080	2,749,350

2.1 Tourism Projections Without the Site C Project

Projections of recreation activity in the Site C pondage area by tourists have been made by Edwin, Reid and Associates. These projections, based on annual increases in tourist traffic and changes in the quality and quantity of the available tourist resource, are summarized in Table 10.

Although participation in general recreation and hunting activities is anticipated to grow continuously throughout the period, the carrying capacity of the river for fishing (12,000 user-days for all users) will continue to be exceeded for a short period; eventually tourist fishing must decline. This decline is likely to offset increases in other recreation activities. Consequently, tourist activities in the Site C pondage area over the period from 1977 to 1996 will remain

TABLE 10: FORECAST OF TOURIST ACTIVITY IN THE SITE C PONDAGE AREA, WITHOUT THE PROJECT, 1977 TO 1996 (User-days)

Year and Tourist Origin	Fishing	Hunting	General Recreation	Total Recreation
1977	4,020	950	7,465	12,435
- B.C.	2,765	950	5,205	8,920
- non-B.C.	1,255	0	2,260	3,515
1981	4,860	979	7,801	13,640
- B.C.	3,400	979	5,440	9,819
- non-B.C.	1,460	0	2,361	3,821
1986	2,760	1,034	8,238	12,032
- B.C.	1,930	1,034	5,740	8,704
- non-B.C.	830	0	2,498	3,328
1991	2,400	1,092	8,699	12,191
- B.C.	1,680	1,092	6,065	8,837
- non-B.C.	720	0	2,634	3,354
1996	2,040	1,153	9,186	12,379
- B.C.	1,430	1,153	6,400	8,983
- non-B.C.	610	0	2,786	3,396

unchanged in intensity although the mix of activities will change. In addition, participation by British Columbia residents and by tourists from outside British Columbia is expected to remain relatively constant.

In relation to the region, tourist activities in the Site C pondage area are expected to decrease in importance. If regional tourism grows at 2 percent per year, the proportion of tourism in the Site C area would decrease from 1.0 percent of the regional total in 1977 to only 0.7 percent in 1996. At a faster pace of tourism growth in the region (4 percent per year), the Site C area would become even less important, representing only 0.5 percent of total regional tourism by 1996. Thus, tourism in the Peace Valley is expected to remain relatively unimportant throughout the next twenty year period.

2.2 Tourism Projections With the Site C Project

Tourism in the Site C pondage area is expected to be the same as in the without the project case, until such time as construction of the dam begins. The construction schedule is anticipated to disrupt recreation in the immediate vicinity of the reservoir by varying degrees over a four year period, commencing in 1984 when the reservoir is to be filled. Edwin, Reid and Associates have assumed these disruptions as follows:

Year	Assumed % Reduction in Normal Recreation Use
1984	75%
1985	75%
1986	50%
1987	25%
1988	0%

After 1988, tourist activity is expected to continue growing

at the same rate as before the project, or at 1.1 percent per year.

In addition to the disruptions caused by filling of the reservoir, tourism in the Site C area will be affected by the transition from river to reservoir recreation. Although the carrying capacity of the reservoir for fishing would increase to 14,000 angler days per year, the quality of fishing may decline, owing to the different composition of fish populations in the river. For boating and associated recreation activities, the reservoir will be more attractive to those tourists with less specialized boating skills.

The overlapping of these effects on tourism in the Site C area has led Edwin, Reid and Associates to forecast a decline in recreation activity after 1983, followed by a rise to pre-1983 levels by 1988. User-day estimates for the twenty year forecast are contained in Table 11.

On a regional basis, it is thought that a short term reduction in tourism in the Site C area would have no effect on tourism in the larger study region. Even with construction of the Site C dam, tourism in the Site C area is expected to represent less than 1 percent of tourism in the region, dropping to between 0.5 percent and 0.7 percent of regional tourism by 1996.

2.3 Impact of the Site C Project

By comparing forecasts of tourism in the Site C pondage area for the with and without the project cases, it is possible to calculate the impacts that the project would have upon local tourism. Using the forecasts of tourism activity summarized in Tables 10 and 11, this comparison has been made and, as shown earlier in Figure 3, demonstrates the short term negative impact that filling of the Site C reservoir would have upon tourism in the reservoir area.

TABLE 11: FORECAST OF TOURIST ACTIVITY IN THE SITE C RESERVOIR, 1977 TO 1996 (User-days)

Year and Tourist Origin	Fishing	Hunting	General Recreation	Total Recreation
1977	4,020	950	7,465	12,435
- B.C.	2,765	950	5,205	8,920
- non-B.C.	1,255	0	2,262	3,515
1981	4,844	979	7,801	13,624
- B.C.	3,376	979	5,440	9,795
- non-B.C.	1,468	0	2,361	3,829
1986	3,920	772	4,098	8,790
- B.C.	2,732	772	2,855	6,359
- non-B.C.	1,188	0	1,243	2,431
1991	3,360	811	8,626	12,797
- B.C.	2,340	811	6,015	9,166
- non-B.C.	1,020	0	2,611	3,631
1996	2,940	856	9,109	12,905
- B.C.	2,050	856	6,350	9,256
- non-B.C.	890	0	2,759	3,649

The magnitude of the negative impact of tourism is not great, however, when compared to tourism in the region. During the year of greatest negative impact (1985), the loss of tourism resulting from Site C would total 5,330 days or about 44 percent of tourist activity in the Peace River Valley without the project. These 5,330 days would only represent 0.3 percent of regional tourism. Clearly this is not a significant impact.

Even the total loss of tourism during the period from 1984 to 1987 only amounts to 14,979 user-days. If more access to the reservoir is provided, this loss is likely to be offset by increased tourism in the Site C area after 1987. After 1996 the reservoir area will continue to generate more tourist recreation than would the river regime, owing to the different carrying capacity for fishing and the ability to accommodate a wider spectrum of general recreation activities not requiring specialized skills or equipment. Over the life of the project these additional benefits would totally negate any short term loss of tourism resulting from construction of the Site C dam. Even then, considering the magnitude of the loss of one area within a larger tourism region, it is likely that tourists would be hindered rather than stopped by the Site C project and would seek an alternative site within the region.

VI REGIONAL SIGNIFICANCE OF TOURIST SPENDING IN THE SITE C PONDAGE AREA

1.0 PRESENT SIGNIFICANCE

As calculated in Section 2.3 of Chapter III, spending by resident and non-resident tourists in the study area amounted to about $31.0 million in 1977. Of this total, tourists from outside B.C. spent the largest amount ($25.4 million during 1,087,940 days of tourism) while visitors from other parts of B.C. spent considerably less ($5.6 million during 217,020 user-days).

Total expenditures by tourists using the Site C pondage area in 1977 amounted to only $328,915. This total accounts for 1.06 percent of tourist spending in the study region. Average daily expenditures by resident tourists in the study region and Site C pondage were similar; however, spending by non-resident tourists amounted to $29.28 per day in the Peace River Valley compared to $23.28 in the study region. This difference is attributable to the greater proportion of non-residents who participated in fishing activities on the Peace River. Despire these differences in daily expenditures in the different areas, it must still be concluded that expenditures by tourists in the Site C pondage area are a minor component of the revenues of the regional tourism industry.

2.0 FUTURE SIGNIFICANCE

While it is generally anticipated that average tourist expenditures will increase in the future, there is no way of accurately knowing the magnitude of these changes. To overcome this problem, the comparison of tourism expenditures with and without the project has been undertaken using current (1977)

estimates of spending. Total tourist expenditures in any given year can be calculated by multiplying the days of tourism estimated for that year (discussed in Chapter V) by the average daily expenditures by tourists (given in Chapter III and IV).

Tourist expenditures in the region can be expected to increase to between $45 million and $65 million in 1996, depending on the annual growth of regional tourism. As summarized below for the twenty year forecast period, regional tourist expenditures would be approximately $40 million in 1986, at which time the major impacts of the Site C hydroelectric project would occur:

	Annual Rate of Increase in Regional Tourism Activity (in 1977 dollars)	
	2%	4%
1977 actual	$31,048,935	$31,048,935
1981	33,608,370	36,332,860
1986	37,106,350	44,192,320
1991	40,968,410	53,766,710
1996	45,232,440	65,415,420

2.1 Tourist Expenditures Without the Site C Project

Total spending by tourists engaged in hunting and general recreation activities in the Site C pondage area is expected to rise throughout the study period in accordance with increases in tourist activity. For visiting fishermen, however, recreation activity and hence tourist expenditures will decline. This decline is important enough to more than offset increased spending by other tourists, as shown in Table 12. By 1996 tourists visiting the Site C area will be spending only $306 thousand, a decrease of about 7 percent

over the 19 year period. Such expenditures would constitute only 0.5 percent to 0.7 percent of regional tourist expenditures in 1996 and indicate that the regional importance of spending by tourists in the Site C pondage area will decline over the forecast period.

TABLE 12: FORECAST OF EXPENDITURES MADE BY TOURISTS VISITING THE SITE C PONDAGE AREA WITHOUT THE PROJECT, 1977 TO 1996

	Fishing	Hunting	General Recreation	Total Recreation
1977 (actual)	$134,885	$38,950	$155,080	$328,915
1981	162,130	40,140	162,060	364,330
1986	92,090	42,390	171,140	305,620
1991	80,050	44,770	180,720	305,540
1996	68,010	47,270	190,830	306,110

2.2 Tourist Expenditures With the Site C Project

It is unlikely that construction of the Site C hydroelectric project would have any impact whatsoever on daily expenditures by tourists. Only tourist activity in the vicinity of the reservoir is expected to change; Chapter V discussed these changes. The short term loss of tourist activity in the Peace River Valley during construction of the project and subsequent flooding of the reservoir would result in a short term decline in tourist expenditures (see Table 13). By 1991, however, total expenditures by tourists using the reservoir would exceed tourist spending under the river regime. Yet even this amount of spending would still only represent 0.6 percent and 0.8 percent of tourist expenditures in the study region.

TABLE 13: FORECAST OF EXPENDITURES MADE BY TOURISTS VISITING THE SITE C RESERVOIR, 1977 TO 1996

	Fishing	Hunting	General Recreation	Total Recreation
1977 (actual)	$134,885	$38,950	$155,080	$328,915
1981	161,810	40,140	162,060	364,010
1986	130,940	31,650	85,130	247,720
1991	112,260	33,250	179,200	324,710
1996	98,190	35,100	189,230	322,520

2.3 Impact of the Site C Project on Tourist Expenditures

The primary impact of the Site C project on tourism expenditures would be a loss of $275 thousand during the period 1984 to 1987 when tourist activity would be most disrupted by construction and operation of the project. During the year of greatest disruption, 1985, the loss of tourist expenditures would total $102,300. While this amount represents about one-third of tourist spending in 1985 without the project, the loss amounts to less than 0.3 percent of tourist expenditures in the region for that year. It must be remembered, however, that after 1987 tourist activity and expenditures on and around the reservoir are predicted to exceed tourist expenditures associated with activity on the Peace River without the project. This long term gain will ultimately exceed the short term loss of tourist spending resulting from construction of the Site C project. However, given the magnitude of the expected loss of tourist expenditures, tourists are more likely to visit alternative sites within the region and spend equivalent amounts of money, rather than forego recreation and tourism opportunities altogether. This would result in changes in the location of tourist spending but would not affect total spending.

3.0 USER BENEFITS

As outlined in Section 2.0 of Chapter III, British Columbia residents experience certain benefits when making use of a specific recreational or tourist resource. Any change in the availability of these resources, such as might result from the construction of Site C, may deprive provincial residents of these user benefits. Accordingly, the loss of any of these user benefits must be evaluated and put in the context of regional recreation and tourism values.

The evaluation process for losses of user benefits has already been carried out in the recreation evaluation contained in the Resource Evaluation Study of the Peace River Site C Hydroelectric Development Environmental and Socio-Economic Assessment. That study examined recreation benefits over the seventy year life of the project and calculated resource losses using the standard economic techniques for a cost-benefit analysis. Although recreation losses to be experienced by resident tourists were not examined separately in that report, this study provides an opportunity for tourist losses to be examined and put in a regional context. The user benefits shown here are, however, calculated on the basis of a seventy year time period; future benefits have been discounted back to 1977 dollar equivalents using a 10 percent discount rate.

3.1 Present User Benefits

Earlier chapters of this study calculated the value of recreation benefits experienced by resident tourists in both the Site C pondage area and the study region: for the Site C area, user benefits totalled $103,085 in 1977; the corresponding estimate for the study region totalled $2,974,584. Thus, the study area represented 3.5 percent of total user benefits for resident tourists in the region.

3.2 Future User Benefits

The value of future user benefits in the Site C area has been calculated in detail in the Resource Evaluation Study and will not be repeated here. However, the major assumptions used to make these calculations are outlined below:

(i) The value of recreation in real terms is expected to increase throughout most of the forecast period. The actual rates depend on the recreation activity under consideration, and a high and low estimate of growth in value is used to give a range of likely values.

(ii) The real value of recreation will continue to grow until such time as the value reaches 5 percent of the residents' income. This income contraint varies according to the recreation activity concerned and to whether or not the project is built.

(iii) The value of recreation on the reservoir is assumed to increase at a slower rate than the value of river recreation.

(iv) Based upon questionnaire responses, the value of river recreation in 1977 is assumed to be 1.2 times as valuable as reservoir opportunities.

If the Site C project is not built, the present value of the recreation benefits to be experienced by resident tourists is estimated to be about $2 million, depending

on the expected rate of growth in recreation value. These user benefits are summarized below according to the type of recreation activity and the annual growth rate in recreation value:

Present Value of User Benefits Without the Project

	Annual Rate of Growth in the Value of Recreation	
	2-4%	5-6%
Fishing	$ 396,800	$ 482,500
Hunting	292,400	524,600
General Recreation	974,400	1,566,900
Total Recreation	$1,663,600	$2,574,000

Construction of the Site C hydroelectric project would result in a short term loss of recreation opportunities over the period from 1984 to 1987. After 1988, however, additional recreation opportunities will be created by the project. Under this scenario the present value of recreation user benefits, as shown below, would be less than the recreation benefits summarized above for the area without the project.

Present Value of User Benefits With the Project

	Annual Rate of Growth in the Value of Recreation	
	2-4%	5-6%
Fishing	$ 411,100	$ 521,500
Hunting	224,600	362,000
General Recreation	720,900	1,154,700
Total Recreation	$1,356,600	$2,038,200

It is worth noting that,with the project, the fishing benefits enjoyed by resident tourists are anticipated to exceed fishing benefits on the river.

The overall impact of the Site C project on resident tourist recreation would be a loss of user benefits amounting to between $307,000 and $535,000, in present value terms. Construction of the project would result in a reduction in resident tourist user benefits of about 19 percent. In a regional context, however, this impact is very small because the present value of user benefits in the study region over a seventy year forecast would amount to between $78.2 million and $2101.6 million,* using a similar range of growth rates for recreation values. The loss attributable to Site C would amount to only 0.3 percent of regional recreation benefits for resident tourists. From the regional perspective, the loss of resident tourist user benefits resulting from the Site C project is insignificant.

* *These figures assume regional tourism to increase at 3 percent per year over a seventy year period.*

VII TOURISM ENHANCEMENT

To this point in the study the impacts of the Site C hydroelectric project on tourist activities in the study area have been determined on the assumption that no attempts will be made to mitigate project impacts or to enhance the benefits of the project. Although the possibilities for impact mitigation are not yet clear, a number of proposals have been made for recreation enhancement projects. This chapter reviews these proposals and examines them in the context of their likely effect on regional tourism.

Two types of recreation enhancement projects were suggested in the Recreation Impact Assessment prepared by Edwin, Reid and Associates. These include construction of three picnic grounds and related facilities at various locations and the construction of a campground. One other recreation enhancement project that has not yet been proposed in detail is the development of visitor facilities at the Site C dam and powerhouse. These three projects will be examined separately.

1.0 PICNIC GROUNDS

Edwin, Reid and Associates suggested that picnic areas be built by 1988 at three locations in the Peace Valley: Bear Flats, Farrell Creek, and Lynx Creek. Each picnic area would have a capacity of 20 units and would cost about $75,000 to construct (on the basis of Provincial Parks Standards in 1977 dollar terms). Annual operating costs are expected to total $13,600 for all three areas. The location of these picnic sites at each major reservoir access point is hoped to generate additional recreation on the reservoir as well as providing a rest stop for people travelling along Highway 29. However, it is expected that regional residents rather than tourists

will make the most use of these facilities.

On the basis of modelling techniques, the additional recreational use of the reservoir resulting from tourists stopping at these picnic sites has been estimated by Edwin, Reid and Associates to be 8,779 user-days in 1988. Of this total, 1,680 days would be enjoyed by resident tourists while the bulk of tourist use (7,099 user-days) would be by non-British Columbians. After 1988, tourist activity at the picnic sites is expected to grow at 1.1 percent per year until 1996, at which time the carrying capacity of the three areas will be reached. With these assumptions, tourist use of the picnic sites (in user-days) has been forecast for the period from 1988 to 1996, as summarized below:

	Resident Tourists	Non-Resident Tourists	Total Tourists
1988	1,680	7,099	8,779
1989	1,698	7,169	8,867
1990	1,716	7,240	8,956
1991	1,734	7,311	9,045
1996	1,830	7,721	9,551

With the tourism generated at these sites, total tourist activity on the Site C reservoir would increase from 12,797 user-days in 1991 to 21,842 user-days - an increase of over 70 percent. Resident tourism on the reservoir would rise by 29 percent in comparison to a 121 percent increase in activity by non-resident tourists. Thus, the picnic sites are predicted to attract primarily tourists from outside the province.

As picnicking and other day-use activities would fall into the category of general recreation, the benefits of the tourism generated by the picnic sites can be estimated. Tourist spending generated by the picnic areas would total $186,760

in 1991, using the average daily expenditures of tourists outlined in Chapter IV. Total expenditures by tourists using the reservoir would then amount to $511,470. This represents a 57 percent increase in tourist spending. While these additional expenditures would not offset losses during the construction period, over the long run local businesses catering to tourists would receive significantly more business with the Site C project, including picnic sites, than if the project were not built.

This observation may be true of tourist-oriented businesses in the immediate area of the reservoir, but it is not clear whether tourist expenditures in the study region would actually increase. If the picnic areas actually generate tourist activity, then the tourism industry in the region would benefit. If, however, the picnic sites attract tourists away from other sites within the region, no net gains in regional tourism will result. On the basis of existing knowledge about tourist activities in the region, it is not possible to determine the extent to which reallocation of tourist activity might occur. Therefore, it is not possible to calculate the regional significance of the tourist activity predicted for the three proposed picnic sites. At most, tourism in the Site C area with the project would still only account for between 1.0 and 1.3 percent of regional tourism and 0.9 to 1.2 percent of regional tourist expenditures in 1991.

New picnic facilities will also generate some user benefits. User benefits experienced by resident tourist would have a present value of between $209,500 and $437,200.* Such additional user benefits would offset much of the loss of user benefits predicted to occur if the Site C project is to be built.

* *Discounted over the 70 year forecast period at a rate of 10% per year. This range of values assumes that the real value of recreation will increase at a rate of between 2% and 5% per year, and that river recreation is 1.2 times as valuable as reservoir recreation.*

2.0 CAMPGROUND

Edwin, Reid and Associates also proposed the construction of a 100 unit campground at Bear Flats. The campground would be developed at a cost of $400,000, after the reservoir has filled and would be in operation by 1988. The site at Bear Flats is close to the major regional population centres and would likely be heavily used by regional residents. Attendance in 1988 is predicted to total 25,920 camper nights, of which 35 percent would be enjoyed by resident tourists and 15 percent by non-resident tourists. Use of the campground is predicted to increase at 10 percent per year until the carrying capacity of the facility is reached in 1992.

With these assumptions, tourist activity (in user-days) at the campground has been calculated and is summarized below:

	Resident Tourists	Non-Resident Tourists	Total Tourists
1988	9,072	3,888	12,960
1989	9,975	4,275	14,250
1990	10,976	4,704	15,680
1991	12,074	5,174	17,248
1996	13,440	5,760	19,200

Assuming that visitations to the campground occurred as predicted, tourist activity in the Site C area would more than double by 1991, increasing from 12,797 user-days without the campground to 30,045 user-days with the facility. Unlike the picnic areas, however, resident and non-resident tourists would benefit equally from the campground.

The tourist expenditures resulting from increased visitations to the reservoir area would total $358,330 in 1991, almost twice as much as the expenditures of tourists using the picnic

areas. With the campground, total expenditures by visitors using the Site C reservoir would amount to $683,040.

In assessing the effect that development of a campground would have upon tourist activity and spending, it must be remembered that no benefits to the region would occur if the new vistiors to Site C had been diverted from other parts of the region. At a maximum, though, total tourism in the Site C reservoir area would amount to between 1.3 and 1.7 percent of tourist activity and spending in the region.

Resident tourists would experience considerable user-benefits from the development of a campground. The present value of these benefits* over the seventy year forecast period is estimated to range between $968,000 and $2,065,700 in 1977 dollars. These benefits would greatly exceed the recreation costs (the value of recreation opportunities foregone) to be experienced by resident tourists if the Site C hydroelectric project is built.

** Calculated according to the assumptions outlined in Chapter V, Section 3.0.*

3.0 VISITOR FACILITIES AT THE DAM SITE

As experienced by the number of people who visit the Bennett Dam on Lake Williston each year, the development of visitor facilities at the Site C dam may create additional tourism in the region. Approximately 30,000 people visit the Bennett Dam each year and, as reported by a questionnaire survey* at the damsite in 1974, about 93 percent of these were tourists:

	Origin of Visitors	# Visitors
Regional Residents	7%	2,100
Resident Tourists	35%	10,500
Canadian Tourists	45%	13,500
Other Tourists	13%	3,900
	100%	30,000

Were similar facilities developed at the Site C dam, it is conceivable that visitations might equal the level of tourism at the Bennett Dam. As Site C would be located relatively closer to a main highway (the Alaska Highway), visitations at Site C might even exceed the level observed at Lake Williston. However, the existence of three dams, Bennett, Site One and Site C, within a relatively short stretch of river, might diminish the interest of tourists passing through the region.

Until such time as specific plans for tourist facilities at the Site C dam are developed, the likely regional tourism benefits cannot be assessed. This sort of development, however, has great potential for increasing tourist activity in the reservoir area.

* *Environment and Land Use Committee, 1974. Williston Reservoir Study: Campsite and Bennett Dam Surveys, Draft Report, B.C. Ministry of Environment.*

APPENDICES

APPENDIX A

TERMS OF REFERENCE

SITE C HYDROELECTRIC DEVELOPMENT
TOURIST INDUSTRY STUDY

INTRODUCTION

In environmental and socio-economic studies of the Site C development conducted to date, there has been no direct assessment of effects on the tourist industry. Accordingly, any change in non-resident recreation has not been included in the determination of net provincial income effects for the project. This study is intended to fill this information gap and extend the impact assessment of recreation to include tourism.

INVENTORY

1. The present and projected regional tourism industry should be described in economic and use terms. The proportion of the regional tourism that is dependent on the Lower Peace River Valley should be identified and evaluated. Tourism should be linked to the following recreation sectors:

    - hunting
    - boating and fishing
    - touring (by road) and sightseeing
    - camping and picnicking

2. The nature and extent of tourism should be explained in regard to tourist origin - destination, routes, attractions, seasonal distribution, expenditures, and goods and services required.

3. The growth and future of tourism in the Peace Region and Lower Peace River Valley should be projected. Possible installations or development plans (eg. parks or boat launch ramps) that could influence the short or long-term use of the Valley should be considered in the analysis.

ASSESSMENT

1. Compare the nature and extent of tourism without the Site C development with that expected if the dam and reservoir were in place (Any assumptions as to changes in recreation capability due to the development should be based on impact assessments already completed for Site C. Population and user-day projections should also agree with those used previously).

2. Predict the economic value of non-resident use of the Site C development and introduce this value into the resource evaluation framework used by Canadian Resourcecon for the project.

3. Project any changes in the growth or future of tourism in the Peace Region or Peace River Valley due to the Site C development.

January 29, 1979

APPENDIX B

CALCULATION OF 1977 RESIDENT AND NON-RESIDENT HUNTING AND FISHING IN THE STUDY REGION

A. HUNTING

1. Non-Resident Hunters

In order for a non-British Columbian to hunt big game in this province, a registered guide must accompany the non-resident on his hunt. In the Omineca Peace Resource Management Region, there were 100 Guide Outfitters in whose allotted areas non-residents could hunt. At the end of each hunting season these Guide Outfitters are required to provide a summary of their guiding activities for non-residents. These guided hunter report forms for 1977 allow calculation of the total number of non-resident hunters active in the study region.

Although the Omineca-Peace Resource Management Region includes areas outside the study area, it is possible to describe the study area in terms of smaller wildlife management units. The study area generally corresponds to management units 20 to 22, 30 to 37, 41 to 51, and 53 to 56 in Region 7. In 1977 there were thought to be 40 Guide Outfitters active in these units. In total these guides provided services for 988 non-resident hunters, or about 63 percent of the 1577 non-resident hunters reported in the larger Omineca Peace Resource Management Region.

Based on survey data* non-resident hunters were reported to have each spent 14.4 days on their hunting trip, of which 10.1 days were actually spent hunting and 0.8 days were spent fishing. On this basis non-resident hunters probably spent 14,230 days in the study region, of which 9980 days were spent hunting and 790 days were spent fishing.

Non-resident hunters in the Omineca Peace region were predominantly from the United States. About 5 percent were Canadians from outside B.C., 86 percent were from the United States, and the remaining 9 percent were from overseas. Consequently, hunting activity by non-resident hunters was disaggregated by origin of hunter as follows:

Origin	Hunter Days
Canada (non-B.C.)	500
United States	8,580
Other	900
	9,980

2. Resident Hunters

Information about the hunting activities of B.C. residents is available from hunter sample information prepared by the Fish and Wildlife Branch. For those wildlife management units in the study region, big game hunting activities were estimated to be:

* *Canadian Resourcecon Ltd., 1979. Economic and Resource Management Aspects of the Commercial Use of Fish and Wildlife Resources in British Columbia, prepared for Fish and Wildlife Branch, Department of Environment.*

	# days	% of total
Black bear	3504	6.7
Caribou	3013	5.8
Elk	1771	3.4
Grizzly bear	785	1.5
Deer	3909	7.5
Mountain goat	1329	2.5
Mountain sheep	1591	3.1
Wolf/cougar	563	1.1
Moose	35708	68.4
	52173	100.0

This number includes hunters from all over the province, except hunters who resided in the study area itself. Owing to the way in which the hunter sample is taken, the aggregate figure of 52,173 days exaggerates big game hunting activities because a hunter after two game species on the same day would represent two hunter days in the hunter sample. To remedy this, it has been observed that resident hunters each purchased an average of 1.27 species licences in 1977 and probably hunted for 1.27 species on each day of hunting. This observation, then, suggests total big game hunting in the study area to have been about 41,080 hunter days. This activity represented about 5.8 percent of all resident big game hunting activity in the province in 1977.

In addition to big game hunters, the hunter sample reported about 3000 waterfowl and upland bird hunters in the study region in 1977. There is, however, no record of the total number of days of bird hunting that occurred. Thus, total hunter activity in the study region exceeded 41,080 days, although total hunting effort is unknown.

B. FRESH WATER SPORT FISHING

The method used to calculate sport fishing activity in the study region is much less direct than the method employed to estimate hunter days. The only available indicator that partially signifies sport fishing activities is the number of fishing licences sold by the Fish and Wildlife offices located in the study area. However, licence sales information is not adequate for two reasons. First, non-British Columbians and perhaps some provincial residents may buy a licence in one place and fish elsewhere. This is particularly true in the Peace region where many non-resident tourists travel through the area en route to another destination. Second, licence sales information gives no idea about how many licence holders actually fished nor does it indicate the number of days on which licence holders actually fished during the year.

Although the first of these inadequacies of licence sales information cannot be circumvented, existing data sources allow calculation of a crude estimate of fishing days in the study region. These sources are reports prepared by Pearse Bowden Economic Consultants Limited, entitled The Value of Fresh Water Sport Fishing in British Columbia (1971) and The Value of Non-Resident Sport Fishing in British Columbia (1970), which address (respectively) resident and non-resident sport fishing activities in the province for those years. This information was subsequently updated in 1977* in a report entitled Fish and Wildlife in British Columbia: A Review of Resource Values*, although much of this data was adapted from the earlier reports. By assuming

* *Quadra Economic Consultants Ltd., 1977.*

that the patterns of fishing activities in 1977-78 were similar to those observed in earlier years, it is possible to prepare an estimate of angling activities for the study area.

1. Non-Resident Angling

For the 1977/78 season the sales of angling licences to non-residents by Fish and Wildlife Branch offices in Dawson Creek, Fort St. John, and Fort Nelson was reported as follows:

	Dawson Creek	Fort St. John	Fort Nelson	Total
Non-Resident (Canadian)	3,282	921	241	4,444
Non-Resident (Annual)	262	186	135	583
Non-Resident (3 Day)	316	269	418	1,003
Total	3,860	1,376	794	6,030

For purposes of calculation, it is assumed that all those who purchased licences in the study region also fished in the region; thus, the total number of non-resident fishermen was estimated to be 6,030.

Based on information from the previous year*, Canadian fishermen fished an average of 2.8 days in the Omineca Peace Region

* *These numbers were derived by dividing the total number of days of fishing by non-residents for the Region as reported in Table 7 of the report by Quadra Economic Consultants, by the total number of licences sold in the Omineca Peace Region:*

Canadian : 19,400 Angler Days/6,984 licences = 2.8 days/licence
Non-Canadian : 17,750 Angler Days/3,941 licences = 4.5 days/licence

while non-Canadians each fished for about 4.5 days (this includes those people holding only 3-day licences). Total fishing effort in the study region is therefore estimated to be 19,580 user days.

Origin	Licences Purchased	Average Days of Fishing	Total Angler Days
Canadians	4,444	2.8	12,445
Non-Canadians	1,586	4.5	7,135
Total	6,030	3.25	19,580

This figure includes fishing activity (790 angler days) by non-resident hunters during their hunting trips.

2. Resident Angling

Approximately 10,080 fishing licences were sold to British Columbia residents in 1977/78 by Fish and Wildlife Branch offices in the study region. Assuming that most of those people who purchased licences in the region were regional residents, and knowing that regional residents spent most of their time (96.3%)* fishing in the region itself, it is possible to calculate total angler use by regional residents. Based on a 1971 estimate of 14.3 days of fishing per year* for residents of the Peace region, total fishing effort by residents of the region in the study area is estimated to have been 138,810 angler days. This represents about 29 percent of all resident angling in the Omineca Peace Region (477,715 days, as predicted using the same method).

* *Table 2, Pearse Bowden Economic Consultants Limited, 1971 report.*

British Columbians from outside the region also fished within the study area. Although it is not possible to determine the number of fishermen from outside the region, it was established in 1971 that regional residents only accounted for 82.4 percent of total fishing activity in the region. Assuming a similar trend exists now, angling pressure by British Columbians from outside the region amounted to 29,700 days. Total fishing activity in the region by B.C. residents would therefore amount to 168,510 angler days.